REMARKS

In the Office Action, the Examiner reviewed claims 1-37 of the above-identified US Patent Application, with the result that claims 10 and 19 (which depend from independent claims 1 and 12, respectively) were deemed to recite allowable subject matter, but the remainder of the claims were rejected under either 35 USC §102 or §103, and claims 6, 9, 19, 29, and 37 were further rejected under 35 USC §112, second paragraph. In response, Applicants have amended the claims as set forth above. More particularly:

The limitations of dependent claim 10 have been incorporated into its parent claim 1 pursuant to the Examiner's conclusion that claim 10 recites allowable subject matter. As such, independent claim 1 and claims depending therefrom are believed to be allowable over the prior art of record.

Independent claim 12 has been amended to require an annular-shaped web region (16) that is located between the central hub bore (18) and the bolt holes (20) and prone to axial-radial oriented defects, as shown in the Figures and disclosed at paragraph [0003] of Applicants' specification.

Independent claim 12 and dependent claim 10 have been amended to require that all of the points (36) are located within the web portion (16), as shown in the Figures 5-7, and claim 12 has been further amended to require

that the transducer unit (22) is placed in a sufficient number of the bolt holes (20) and the pulse-echo diagnostic technique is performed to locate additional points (36) throughout the web portion (16), as stated in paragraph [0021] of Applicants' specification and shown in Figure 6.[1]

Independent claim 12 has also been amended to require that a reflected ultrasonic signal is returned from at least one of the plurality of points (36) at which an axial-radial oriented defect is present and oriented substantially perpendicular to the ultrasonic signal that returned the reflected ultrasonic signal, as disclosed at paragraph [0023] of Applicants' specification.

Dependent claim 6 has been amended to address the Examiner's concern for use of "its." Independent claim 12 and dependent claims 26 and 31 have been similarly amended to address this same issue.

Dependent claims 13-15 have been amended for consistency with the amendments to their parent claim 12.

Independent claims 21 and 31 have been amended to require that the ultrasonic transducer (22) has been calibrated on the basis of the amplitude of ultrasonic signals reflected from the central opening/hub bore (18). Support for

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[1] According to MPEP §2163 II.A.3(a), "drawings alone may provide a 'written description' of an invention as required by [35 USC §112, first paragraph]," and "[i]n those instances where a visual representation can flesh out words, drawings may be used in the same manner and with the same limitations as the specification." (Citations omitted).

these amendments can be found in Applicants' specification at paragraphs [0023], [0025], and [0042].

Applicants believe that the above amendments do not present new matter. Favorable reconsideration and allowance of remaining claims 1-37 are respectfully requested in view of the above amendments and the following remarks.

Rejections under 35 USC §112, Second Paragraph

Claims 6, 9, 18, 29, and 37 were rejected under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicants regard as their invention. As noted above, Applicants believe that the rejection of claim 6 (and the same issue arising in claims 12, 21, and 31) has been addressed by amendments to these claims. Regarding the rejection of claims 9, 18, 29, and 37, the Examiner stated that the variables α and θ were not defined. Applicants respectfully believe this rejection was in error, because each of these claims expressly recites "an angle α between the sides corresponding to the distances d and R, an angle θ between the sides corresponding to the distances r and R."

In view of the above, Applicants respectfully request reconsideration and withdrawal of the rejections under 35 USC §112.

Prior Art Rejections

Finally, the Examiner rejected claims 1-9, 11-18, and 20-37 under 35 USC §102 or §103 in view of U.S. Patent No. 6,725,722 to Murphy et al. (Murphy). As noted above, Applicants have amended independent claim 1 to incorporate the limitations of its dependent claim 10, and therefore respectfully request withdrawal of the rejections under 35 USC §§102 and 103 as they apply to claims 1-11.

Applicants respectfully request reconsideration of these same rejections as they apply to remaining claims 12-18 and 20-37 in view of the amendments presented above as well as the following comments.

Applicants' amended independent claim 12 requires that the points (36) identified at the intersection between the ultrasonic signals and radials (34) of the turbine wheel (10) are all located within the web portion (16) of the wheel (10), the transducer unit (22) is placed in a sufficient number of the bolt holes (20) and the pulse-echo diagnostic technique is performed to locate additional points throughout the web portion (16), and reflected ultrasonic signals coincide with axial-radial oriented defects present and oriented substantially perpendicular to the ultrasonic signal that returned the reflected ultrasonic signal. In contrast, Murphy does not teach or suggest scanning essentially the

entire web portion (16) of a turbine wheel (10), or that defects oriented perpendicular to the travel of ultrasonic signals can be detected within a web portion (16) in this manner. Instead, Murphy is limited to detecting circumferentially-oriented cracks near holes 22 immediately adjacent a hole 50 in which a transducer 40 has been placed. Therefore, Applicants respectfully request withdrawal of the rejection under 35 USC §102 and 103 as it applies to independent claim 12 and its dependent claims 13-20.

Applicants' amended independent claims 21 and 31 require that the ultrasonic transducer (22) has been calibrated on the basis of the amplitude of ultrasonic signals reflected from the central opening/hub bore (18). Murphy does not teach or suggest a transducer calibrated in this manner, and therefore Applicants respectfully request withdrawal of the rejection under 35 USC §102 and 103 as it applies to independent claims 21 and 31 and their dependent claims 22-30 and 32-37.

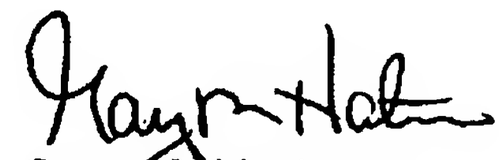
Closing

In view of the above, Applicants believe that all issues outstanding from the Office Action have been addressed, and that the claims define patentable novelty over all the references, alone or in combination, of record. It is therefore respectfully requested that this patent application be given

favorable reconsideration.

Should the Examiner have any questions with respect to any matter now of record, Applicants' representative may be reached at (219) 462-4999.

Respectfully submitted,

By 
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